

Epitomes

Important Advances in Clinical Medicine

Ophthalmology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in ophthalmology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in ophthalmology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Ophthalmology of the California Medical Association and the summaries were prepared under its direction.

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Viral Corneal Disease

VIRAL INFECTIONS of the conjunctiva and cornea are commonplace and threaten sight. Herpes simplex keratitis remains the most common sight-threatening viral infection in the United States. Significant advances in antiviral therapy have occurred since the development of idoxuridine in 1964. The newest and most potent topical antiviral agent for herpes simplex keratitis is trifluridine (trifluorothymidine; Viroptic). Trifluridine is available in drop form and is useful not only for treating dendritic keratitis but is the drug of choice for the more serious form, geographic herpetic keratitis. Vidarabine (adenosine arabinoside; Vira-A) is available in ointment form and remains a useful antiviral agent for dendritic keratitis. The use of corticosteroids is contraindicated during active herpes simplex keratitis. For this reason, corticosteroid antibiotic combination drops should be avoided by physicians when treating "an infectious red eye."

Herpes zoster ophthalmicus remains a common sight-threatening infection, particularly in the elderly population. Topical antiviral agents have not been effective for treating this disorder. When the eye is involved, the mainstay of treatment is topical corticosteroids, cycloplegics and control of intraocular pressure. Recently studies using high-dose oral acyclovir (Zovirax) have shown a beneficial response in terms of the incidence and severity of both keratitis and uveitis. It appears that the use of this agent early in the course of herpes zoster ophthalmicus (less than seven days from onset of skin eruption) can be of significant ocular benefit. Unfortunately, the drug does not appear to have a beneficial effect on postherpetic neuralgia in immunocompetent patients.

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Ocular Manifestations of the Acquired Immunodeficiency Syndrome

OCULAR DISORDERS are a common manifestation of the acquired immunodeficiency syndrome (AIDS). Disorders fall into four categories: lesions related to retinal vascular disease, ocular neoplasms, neuro-ophthalmic abnormalities and ocular opportunistic infections. The most common ocular lesions are "cotton wool spots" that correspond to areas of retinal ischemia. A retinal vasculopathy of unknown cause leads to focal retinal ischemia in most AIDS patients. Cotton wool spots are asymptomatic, do not require treatment and have no known diagnostic or prognostic significance. Ocular neoplasms include conjunctival Kaposi's sarcoma and orbital Burkitt's lymphoma. Neuro-ophthalmic abnormalities, including papilledema, cranial nerve palsies and visual field defects, may be the first signs of intracranial infections or neoplasms.

Many opportunistic pathogens have been reported to cause ocular infections in AIDS patients. Cytomegalovirus (CMV) retinopathy, however, which develops in a third of patients, is the only common ocular opportunistic infection. CMV infection causes full-thickness retinal necrosis and permanent loss of vision. Lesions are characterized by large yellow-white granular patches with indistinct borders, usually associated with hemorrhage. CMV retinopathy may be bilateral and multifocal. It is relentlessly progressive, eventually causing destruction of the entire retina.

Currently available antiviral drugs (vidarabine, acyclovir) and immunotherapeutic drugs (α - and γ -interferon, interleukin 2) have been ineffective in treating CMV retinopathy in AIDS patients. Recently, however, a new drug, 9-[2-hydroxy-1-(hydroxymethyl)ethoxymethyl]guanine (BW

B759U, Burroughs Wellcome) has shown promise in the treatment of this infection.

Most patients who have been treated with BW B759U on a compassionate protocol basis have responded to treatment. Treatment does not restore lost vision but does halt the progress of infection into visually important structures, including the macula and optic nerve. The drug does not eradicate infection, and reactivation of disease is common following cessation of therapy. Recurrences develop at the borders of old lesions, indicating the persistence of live virus in the eye despite treatment. Therefore, it is necessary to maintain patients on continued therapy, which is complicated by the fact that the drug can only be administered intravenously. BW B759U is currently undergoing a multicenter randomized trial to evaluate further its efficacy and safety in the management of CMV retinopathy in AIDS.

Other intraocular infections in AIDS patients (ocular toxoplasmosis, cryptococcosis, mycobacteriosis and histoplasmosis) are uncommon, but may be the first manifestation of disseminated, tissue-invasive infections elsewhere in the body.

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Approaches to Surgical Repair of Adult Strabismus

STRABISMUS (ocular misalignment) is often thought of as a problem limited to infants and children. Actually, adult strabismus is relatively common, occurring in about 1% of the general population. Adult strabismus can be the result of persistent childhood strabismus or can be caused by cranial nerve palsies, thyroid disease, trauma to the orbit or eyeball, a periocular operation or loss of vision—that is, through cataracts or trauma. Patients with acquired strabismus should be evaluated for the possibility of a neurologic disease such as myasthenia gravis, progressive external ophthalmoplegia and cranial nerve palsies. A helpful distinguishing feature between acquired and infantile strabismus is the presence of diplopia. Infants and children (birth to 10 years of age) have a high degree of central nervous system plasticity and are able to develop a suppression mechanism that prevents diplopia throughout life. Adults, however, are unable to suppress, and acquired strabismus in adulthood inevitably results in diplopia.

A common misconception is that strabismus in adulthood is difficult or even impossible to treat. With recent advances in medicine, however, adults with strabismus actually have better treatment options than do children. One of the most recent innovations in the treatment of adult strabismus is the use of botulinum toxin injections (see the epitome on botulinum toxin for details). During the period of induced paralysis, which lasts about six to eight weeks, the antagonist muscle undergoes a secondary contraction. The transient paralysis wears off, but a persistent change in the antagonist muscle occurs, thus producing a change in eye position. This

form of therapy requires only a topical anesthetic and is very useful in patients with small-angle deviations and in patients with a high anesthesia risk.

Another treatment modality that is extremely useful in adults is the adjustable suture technique. This surgical procedure allows the surgeon to change the eye position in the immediate postoperative period while the patient is fully awake. The operation is done in two stages. In the first stage, the extraocular muscle is secured and placed on a suture in such a way that the muscle location can be changed the following day when the patient is fully awake. The second phase of the procedure entails adjusting the position of the muscle so that the eyes are properly aligned. The adjustable suture technique is particularly useful in complicated strabismus cases, such as in the treatment of superior oblique palsies where the eyes can be misaligned vertically, horizontally and even torsionally. With the adjustable suture technique, there is a much better chance of straightening the eyes with one operation, rather than the multiple surgical procedures often associated with the correction of strabismus in adults.

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Treatment of Retinopathy of Prematurity

AS THE SURVIVAL RATE of low-birth-weight infants has increased, there has been a concurrent increase in the incidence of retinopathy of prematurity. This disorder is characterized by retinal vascular changes that occur during the first months of life, including arteriolar and venular dilatation and tortuosity, peripheral shunt formation and gliovascular proliferation into the vitreous body. These alterations often are minimal and regress in time, but they may progress and lead to cicatrix formation and total retinal detachment, sometimes called retrolental fibroplasia. Cicatricial retrolental fibroplasia develops in an estimated 2,100 infants a year in the United States.

Many types of therapy have been tried. The results of recently completed trials of prophylaxis with antioxidants (vitamin E) have been disappointing and surgical treatment of retinal detachment in advanced stages of retrolental fibroplasia generally has poor results. Because the vasoproliferative changes seen in retinopathy of prematurity are similar to those found in conditions related to retinal ischemia or hypoxia—such as diabetic retinopathy and sickle cell retinopathy—it has been postulated that therapy analogous to that found efficacious in these diseases might be of value in preventing progression of the retinopathy of prematurity. Ablation of ischemic retinal tissue in the acute phases of this disorder by cryotherapy has been postulated to improve oxygenation of surrounding retinal tissue and to reduce the vasoproliferative changes that lead to cicatrix formation. Cryotherapy and photocoagulation have been tested in many isolated, relatively uncontrolled trials of small sample size, leading to variable results and conclusions. Photocoagulation using either xenon arc or argon laser has proved technically